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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,373	07/11/2003	Bernd Witzigmann	50154/PAN/E349	4968

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EXAMINER

MENEFEE, JAMES A

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,373

Applicant(s)

WITZIGMANN ET AL.

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/11/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 9, 11, 22, and 26-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (US 2002/0009116). See esp. figs. 1 and 2C, though the whole document is relevant.

Regarding claim 1, Kobayashi discloses a light emitting device comprising lower cladding 2, an optical cavity adjacent the lower cladding and comprising a lower active region 3 and an upper active region 5 formed of first and second material systems, and an upper cladding 13 adjacent the cavity.

Regarding claims 2-3, the active regions 3 and 5 comprise first and second MQW active regions respectively.

Regarding claim 4, the second MQW region 5 comprises a plurality of periodic structure elements in a direction of light propagation.

Regarding claim 9, there is further a buffer layer 4 formed between the active regions 3,5, where the buffer region serves as an etch stop layer.

Regarding claim 11, there is a filler 6 formed adjacent to and between the periodic structure elements 5.

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Regarding claim 22, Kobayashi discloses the claimed structure as in the rejection of claims 1 and 4 above. The device is a single mode DFB. See pars. [0067]-[0068]. It is not explicitly disclosed that the structure is “for eliminating mode degeneracy,” however this is deemed to be inherent since the structure operates in a single mode. Additionally, this is a preamble limitation that merely describes the operation of the device and need not be given weight.

Regarding claims 26-27, see the rejections of 9 and 11 above.

Claims 1-4, 12-13, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishikawa et al. (US 2001/0032976). See esp. Fig. 3 and discussion unless otherwise noted.

Regarding claim 1, Ishikawa discloses a light emitting device comprising lower cladding 1 (while called a substrate it is n-type and acts as a cladding), an optical cavity 2 adjacent the lower cladding and comprising a lower active region MQW-B and an upper active region MQW-A formed of first and second material systems, and an upper cladding 4 adjacent the cavity.

Regarding claims 2-3, the active regions comprise first and second MQW active regions respectively.

Regarding claim 4, the second MQW region MQW-A comprises a plurality of periodic structure elements in a direction of light propagation.

Regarding claim 12, the conduction band offsets in the first MQW MQW-B may be larger than in the second MQW MQW-A. See Fig. 7.

Regarding claim 13, optical and differential gain of the first MQW MQW-B may be higher than that of the second MQW MQW-A. See par. [0024].

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Regarding claim 22, Ishikawa discloses the claimed structure as in the rejection of claims 1 and 4 above. The device is a single mode DFB. See par. [0003], [0014]. It is not explicitly disclosed that the structure is "for eliminating mode degeneracy," however this is deemed to be inherent since the structure operates in a single mode. Additionally, this is a preamble limitation that merely describes the operation of the device and need not be given weight.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-8, 14-18, 20, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi. Kobayashi discloses the limitations of the claims as in the above 102 rejections, except does not disclose the particular materials of the first QW structure (i.e. highly reactive, comprising Al or Sb). But such QW materials are well known in the art. It would have been obvious to one skilled in the art to make the QWs of such materials, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). The QW material will impact features such as the output wavelength, and thus the changing of materials can be used to change the laser output, as is known.

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Claims 5-8, 14-17, 21, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa. Ishikawa discloses all of the limitations except the materials of the active regions. This is taught as in the previous 103 rejection.

Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Borchert et al. (US 5,953,361). Kobayashi teaches and discloses the limitations of the parent claims as noted above. The cladding layers are further doped with opposite dopant types. It is not disclosed that the buffer layer is doped with the same dopant as the upper cladding. Borchert discloses a similar system where buffer layer 3 and upper clad 7 are the same dopant type. It would have been obvious to one skilled in the art to make the device in such a manner so that the p-n junction is more closely formed around the active layer, as would have been apparent to one skilled in the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsang discloses that it is known in DFB lasers that there can be a quantum well active layer, and then a separate grating also made of quantum wells.

Yokozeki et al. (US 6,898,224) teaches that QWs including Sb are known. Chinoe et al. (US 4,881,238) teaches that Qws including Al are known.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James Menefee
July 22, 2005